



122 & 124 Coolibah Drive, Greenwood

Transport Impact Statement



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1. INTRODUCTION

1.1. Background

A Development Approval is currently being sought for a proposed Childcare Centre at 122 & 124 Coolibah Drive, Greenwood. The proposed development is for a two storey Childcare Centre which will accommodate 83 children.

GTA Consultants was commissioned by Planning Solutions in March 2020 to undertake a transport impact assessment of the proposed development.

1.2. Purpose of this Report

Western Australian Planning Commission Transport Assessment Guidelines (WAPC Guidelines) provide direction on the level of assessment which is necessary to be carried out with respect to the likely traffic impact of a development proposal. Typically, any development which is expected to have a 'high' traffic impact, that is, generating more than 100 trips in the peak hour is satisfied by a TIA. Any development which is expected to generate less than 100 trips in the peak hour requires a Transport Impact Statement (TIS) to be undertaken. Both types of assessment consider the operation and layout of the site, but they differ in their assessment of external traffic impact.

In the context of this proposal, it is estimated there may be less than 100 trips generated in a given peak hour if applying 'typical' traffic generation rates. In this case a TIS is appropriate. This TIS briefly outlines the transport aspects surrounding the proposed development. The intent of a TIS, as per the WAPC Guidelines, is to provide the approving authority with sufficient transport information to confirm that the Applicant has adequately considered the transport aspects of the development and that it would not have an adverse transport impact on the surrounding area.

In accordance with the WAPC Guidelines, this TIS outlines:

- Existing transport conditions proximate to the site
- Suitability of the proposed parking provision within the site
- The adequacy of the proposed site layout
- The traffic generating characteristics of the proposed development
- The anticipated impact of the proposed development on the surrounding road network.

1.3. Previous Studies

There are no relevant previous studies related to the subject site.

1.4. References

In preparing this report, reference has been made to the following:

- City of Joondalup Local Planning Scheme No. 3 (LPS 3)
- WAPC Transport Assessment Guidelines for Development: Volume 4 – Individual Developments

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- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- plans for the proposed development prepared by Aveling Developments (Job number G1385), last access dated 27/05/2020
- various technical data as referenced in this report
- other documents as nominated.

2. PROPOSED DEVELOPMENT

2.1. Subject Site

The subject site is located at 122 & 124 (Lots 208 and 207) Coolibah Drive, Greenwood. The sites have an area of 729sqm and 735sqm and frontages of 18m and 20m to Coolibah Drive, respectively. Coolibah Drive is a Local Distributor Road.

There are two existing residential dwellings on the site which will be demolished for the proposed development. The sites are zoned "Residential" under the City's LPS 3 and "Urban" under the Metropolitan Region Scheme (MRS). The surrounding area is predominantly low to medium density residential, with the land west of Coolibah Drive (including the subject site) having a Residential Density Code (R-Code) of R20/40, whilst the land east of Coolibah Drive is coded R20. Land to the rear of the subject site is zoned "Residential - Restricted Uses - Aged and Dependent Persons' Dwellings" with an applicable density code of R40, whilst the lot to the north of the site (126) is approved for Medical Consulting Rooms. 132 Coolibah Drive is the Coolibah Shopping Complex. Within a short walk to the south is West Greenwood Primary School, Greenwood Senior High School and Greenwood College. The proposed Childcare Centre fits into the residential context of the neighbourhood, and is conveniently co-located near local educational facilities.

The anticipated operating hours of the Childcare Centre are 6.30am to 6.30pm, which allows for pick up and drop offs to be spread throughout this time.

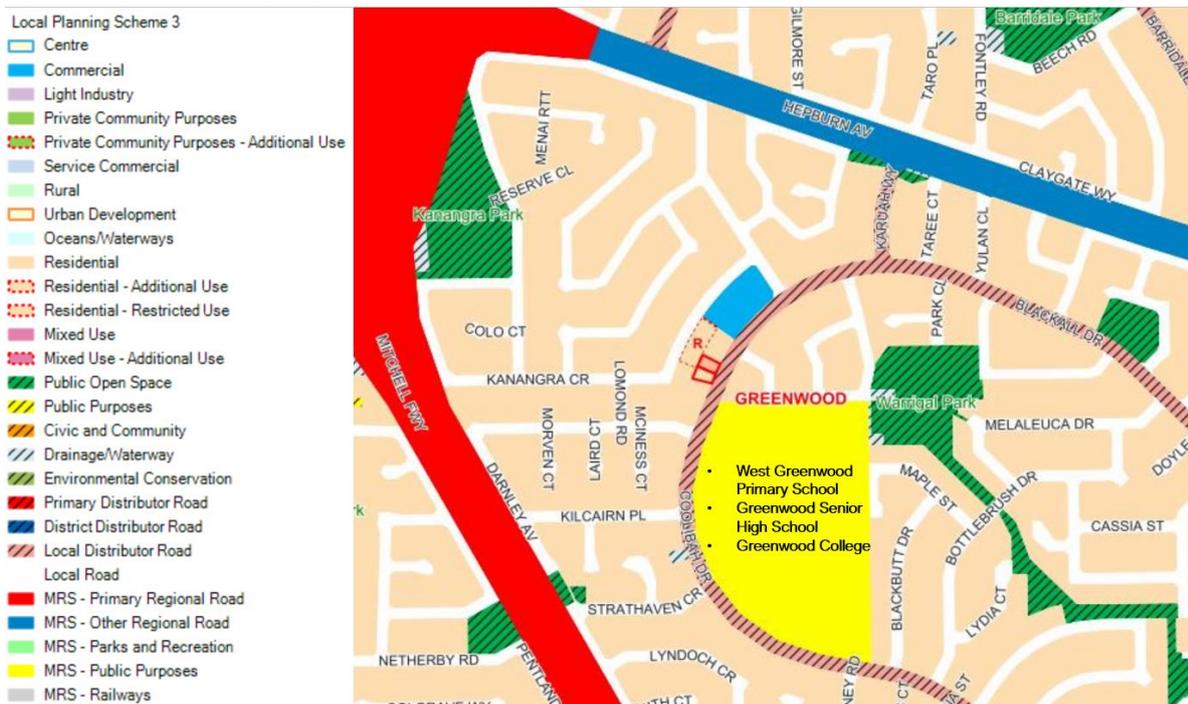
The location of the subject site and the surrounding environs is shown in Figure 2.1, and the land zoning is shown in Figure 2.2. Development Plans are included at Appendix A.

Figure 2.1: Subject Site and its Environs



(PhotoMap courtesy of NearMap Pty Ltd)

Figure 2.2: Land Zoning Map



(Reproduced from City of City of Joondalup Intramaps)

3. VEHICULAR ACCESS AND PARKING

3.1. Access Arrangement

The proposal includes the construction of a Childcare Centre with an undercover car park. Vehicular access is proposed on the northern side of Lot 207 (124), close to the medical centre development. A pedestrian access path is proposed on the northern portion of Lot 208 (122).

The development's compliance with the relevant traffic and access provisions of the City's Local Planning Policy is demonstrated below.

LPP Design Element	LPP Development Requirement	Development Provision
Car Park Location	(i) All car parking is to be provided on-site; verge parking is not permitted.	All parking is provided on site. Quantum also meets empirical parking demand (see Section 3.2).
	(ii) Car parks must be clearly visible from the street to encourage parking on-site instead of on the road verge	Vehicular access location is in clear view from the street, suitably located at the end of the retaining wall and pedestrian path. There is an open style sliding vehicle gate. This is recommended to remain open during business hours and closed outside these times. Also suitably signed for Childcare parking.
Car Park Design	(i) Car parks shall be designed in accordance with Australian Standards AS 2890.1 and/or AS 2890.2 as amended from time to time.	GTA has checked the car parking layout of the Revision D Plans prepared by Aveling Developments (last access date 27/05/2020, also included at Appendix A) and carpark dimensions proposed are in accordance.
Vehicle Access	As Childcare premises can be reasonably high traffic-generators, they should be located on Local Distributor Roads in such a manner that they would not conflict with traffic control devices and would not encourage the use of nearby Access Roads for turning movements	Coolibah Drive is a Local Distributor Road, as defined in the Main Roads WA Road Information Mapping System.

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	(i) Vehicle access should not be taken from District Distributor A Roads. Only under exceptional circumstances may vehicle access be considered from a District Distributor B or Access Road.	
	(ii) Vehicle access with separate entry and exit points is preferred (Type 1 on Figure 1). Alternatively, 'two-way' vehicle access (Type 2 on Figure 1) is required.	Two way vehicle access, consistent with the Type 2 on Figure 1 diagram in the City's LPP is proposed.
	(iii) Where practicable, existing vehicle access points should be utilised instead of proposing new access points.	A new vehicular access point is proposed on the site, however this will result in the overall reduction of crossovers (from two over two lots to one over two lots).
	(iv) Vehicles are required to enter and exit the site in forward gear.	Two way vehicular access is permitted, and a reversing bay is proposed in the car park to allow vehicles to turn around and exit in forward gear.
Pedestrian Access	(i) A footpath must be provided from the car park and the street to the building entrance.	The Childcare centre can be accessed via three separate paths from the carpark, with two sets of stairs and one access via a ramp.

Given the above demonstrated compliance with the City's Local Planning Policy, vehicular and pedestrian access to the site is adequate.

3.2. Parking Provision

The development proposes up to 83 children and 16 staff. Given this, and based on the City of Joondalup's Childcare Centres Policy/LPS3, a total of 27 bays comprised of 16 staff bays and 11 on-site bays for patrons are required. 1 bicycle bay is also required for every 8 employees. Therefore 2 bike bays are required, however 6 have been provided to encourage the use of sustainable modes of transport.

A total of 24 car parking and 6 bicycle parking bays are proposed on the site, with one reversing bay. Of these 24 car parking bays, six are tandem bays. These bays are assigned to staff, and therefore can be appropriately managed on site with the adoption of a management plan by the centre. A total of seven visitor bays plus one universal access bay is proposed. A copy of the development plans is contained at Appendix A.

GTA Consultants has developed its own database for both peak parking demand and traffic generation based on observations made at various sites for various land uses located throughout Australia. In terms of traffic generation for Childcare Centres, the expected peak traffic flows in the AM and PM peaks are (inclusive of parents and staff):

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- AM Peak 0.83 trips per child
- PM Peak 0.82 trips per child

Based on the 83 children maximum expected to be on the site, this development is expected to generate approximately:

- AM Peak 69 trips
- PM Peak 68 trips

Based on the GTA database, a Childcare Centre has a peak parking demand of 0.19 parked cars per child in both the AM and PM peak periods. Based on the 83 children expected on the site the peak parking demand is expected to be 16 cars parked on site (inclusive of staff and parents). These peaks are expected to occur at typically 9am and 3pm with demand decrease either side of these times.

During the day, with typically no children being picked up or dropped off, the parking demand would be based on the staff on the site. Census data for the City of Joondalup from 2016 indicated that the City of Joondalup residents used the following modes of transport to places of employment:

- Car Driver 64.7%
- Car Passenger 4.0%
- Train/Bus 10.4%
- Motorcycle 0.4%
- Bicycle 0.6%
- Walk (Only) 1.3%
- Worked at Home 4.5%
- Other (taxi/uber/dropped off) 2.5%
- Did not go to work or note stated 11.4%

Based on the above (discounting “worked at home” and “did not go to work”), there is an expectation that of the 16 staff, approximately 13 vehicles will be parked on-site for staff members whilst there is expected to be 1 staff member expected to arrive by bicycle/motorcycle/walk. The remaining 2 staff are expected to take either train/bus to the centre and/or arrive via ride sharing/be dropped off.

The expected parking demand use should not exceed the proposed supply of parking on the site consisting of:

- 7 short term drop-off bays (for dedicated use by parents)
- 16 longer term parking bays (for use by staff and/or parents), inclusive of 3 tandem bays (for 6 spaces) for exclusive use by staff
- 1 universal access long term bay with shared area

Under the expected GTA database peak parking demand, the 16 cars expected on site will be able to park within the available 24 bays provided and there should not be any requirement for cars to be parked off-site.

A further mitigating factor is that the centre is located approximately a two-minute walk to West Greenwood Primary School. This may reduce number of vehicles entering the site, as parents link their trips and may park at the school to take one child to class and then walk to the childcare centre to drop off another child.

A further assessment was undertaken, this based on an M/M/c multi-server model queuing analysis for the car park with the parking bays acting as servers. Based on the 7 short term bays (with average parking estimated at 7½ minutes) and the balance of the available bays, excluding those used by staff, totalling 1 bay (with parking assumed to be for 15 minutes each time), the car park is expected to be able to cater for up to

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approximately 60 vehicles entering the site in the busiest peak hour and parking. Based on an arrival rate of 35 vehicles per hour the 95th percentile queue (this is typically the required design parameter for traffic engineering purposes) is expected to be up to 8 vehicles parked on the site at the busiest period (this excludes the expected 13 staff cars parked on-site) or 21 including staff. For an average period, there is expected to be approximately 4 cars parked on the site, excluding staff or 17 including staff.

If 3 of the above 16 staff bays were converted to long term parent bays (thus providing 7 short term bays and 4 long term bays including the universal access bay) the 95th percentile queue within the car park is expected to be 8 cars parked leaving 3 bays empty during the busiest parking periods.

For good car park design supply should be about 10% higher than the estimated peak demand for parking, in this case 23 bays (the expected 95th percentile of 8 parked parents plus 13 staff x 1.1).

With 24 parking bays proposed to be provided this in excess of the above 23 bays for the operation required for a good of the car park is expected be more than acceptable.

In addition to actual parked cars, the car park aisle and entry driveway will allow for up to approximately 2 cars to queue before impacting the Local Distributor Road, if there were to be rare instances (if any) to require such use.

3.3. Tandem Bay Management

With the operation of the tandem bays for staff, it is suggested that the management of their use be managed by the centre. The simple recommendation would be that staff arriving first should park in the end bay of these tandem bays, so that staff arriving afterwards, can then park behind these other parked cars.

If staff must leave during the day then arrangements would be made to allow cars to be moved and allow first parked cars to leave as required. The use and operation of the tandem bays will be pre-determined by rostering and bay allocation.

3.4. Public, Private, Disabled Parking Set Down / Pick Up

The expected parking demand use should not exceed the proposed supply of parking on the site consisting of:

- 7 short term drop-off bays (for dedicated use by parents)
- 16 longer term parking bays (for use by staff and/or parents), inclusive of 3 tandem bays (for 6 spaces) for exclusive use by staff
- 1 universal access bay with shared area

The 16 parking bays noted as staff bays will not be required in its entirety. As assessed above, 13 staff are expected to drive to work and park on site. The remaining 3 staff are expected to use other modes of transport to and from the centre.

4. SERVICE VEHICLES

4.1. Rubbish Collection and Emergency Vehicle Access

A 5.23m x 2.46m bin storeroom is proposed in the undercover car parking area.

It is proposed that these bins be moved to the road verge and collected by the City's waste collection vehicle on rubbish collection day. This is to be confirmed with the provision of a waste management plan, if required by the City.

5. TRAFFIC VOLUMES

5.1. Daily or Peak Hour Traffic Volumes

The childcare centre is proposed to cater for up to 83 children with 16 staff. GTA Consultants has developed a database for both peak parking demand and traffic generation based on observations made at various sites located throughout Australia. In terms of traffic generation, for Childcare Centres, the expected peak traffic flows in the AM and PM peaks are (inclusive of parents and staff):

AM Peak	0.83 trips per child
PM Peak	0.82 trips per child

When compared to the ITE trip generation rates of 0.80 in the AM peak and 0.81 in the PM peak, GTA's data base (based on Australian Surveys) and adopted rates are slightly higher than the ITE rates, and as such this allows for a more robust assessment. Based on the 83 children maximum expected to be on the site, this development is expected to generate approximately:

AM Peak	69 trips
PM Peak	68 trips

These trips are expected to be evenly divided into 50% entering and 50% exiting over that peak period (approximately 34-35 entering the crossover and 34-35 exiting the crossover) and with the frontage road, this is further expected to be distributed 50% in each direction of Coolibah Drive.

Based on the current traffic flows on Coolibah Drive of approximately 3,500vpd and the expected traffic flows for the proposed development there is no requirement to undertake a further detailed intersection assessment. Under these traffic flows, the crossovers are expected to operate at close to a level of service A with low degrees of saturation, see below.

This conclusion is drawn from information previously part of, Table 2.4 from the Austroads publication, *Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings* provides advice as to intersection and crossover performance in peak flow conditions about possible further analysis. This is summarised in Table 5.1. If the calculated expected traffic flows for this development exceed those shown in Table 5.1 further assessment is typically required. However, unlike schools which have set start and finish times, childcare centre pick up and drop off times are generally spread out over a longer period of time, and therefore there is a lesser impact on the network than a school.

Table 5.1: Austroads Guidelines

Major Road Type	Major Road Flow (two-way, vph)	Minor Road Flow (two-way, vph)
Two-lane	400	250
	500	200
	650	100
Four-lane	1,000	100
	1,500	50
	2,000	25

The development is expected to generate two-way traffic flows of approximately 70 vehicles per hour (the “Minor” road) whilst traffic flows on Coolibah Drive (the “Major” road) are expected to be no more than approximately 350 vehicle per hour in the PM peak. The minor road flows are less than a third of the required trigger of 250 (referring to row one in the above table).

5.2. Types of Vehicles

The type of vehicles expected to access the site are solely private motor vehicles. There is not expected to be a vehicle larger than that, apart from a small delivery van or similar, delivering to the site, but a vehicle of this size would be very close in size to the largest expected private motor vehicle, typically a B99 as defined in Australian Standards.

No coaches or buses are expected to enter the site beneath the building.

6. TRAFFIC MANAGEMENT ON FRONTAGE STREETS

Coolibah Drive affords the site the only viable access to/from the development. This road is under the care and control of the City of Joondalup and is classified at a Local Distributor under Main Roads Western Australia Functional Road Hierarchy. It carries approximately 5,920¹ vehicles per day.

In the peak period the traffic flows consist of:

AM Peak (8am to 9am) 766 vehicles per hour

PM Peak (3pm to 4pm) 635 vehicles per hour

The road consists of two 4.0m wide carriageways either side of a 2.0m wide mixed painted/raised concrete median within a 26m wide road reserve. Full movements will be available at the proposed crossover location for the development.

On both sides of Coolibah Drive there are 1.2m wide footpaths set back approximately 3.5m from the edge of the road. East of the proposed development crossover there is an existing traffic island with a pedestrian gap and ramps.

Coolibah Drive is subject to the default built up area speed limit of 50km/h but there is a 40km/h school zone south of the site towards West Greenwood Primary School.

In the five-year period up to 31/12/2019 there had been no recorded crashes on Coolibah Drive in the vicinity of the proposed development suggesting this section of road is relatively safe.

¹ From Main Roads recorded for 2014/15

7. PEDESTRIAN, CYCLIST AND PUBLIC TRANSPORT ACCESS

7.1. Pedestrian Access

7.1.1. Existing and Proposed Pedestrian Facilities Within the Development

There are no existing pedestrian facilities within the development, given they are currently used for Residential purposes.

As part of the development, three pedestrian access points are proposed within the development, including two sets of stairs and one ramp. One ramp and one set of stairs lead to the front of the Childcare Centre and therefore path along Coolibah Drive and one set of stairs are on the northern boundary, providing access between the centre and the bin store area. All pedestrian access points service the Childcare area to/from the car parking area.

7.1.2. Existing Pedestrian Facilities on Surrounding Roads

There are 1.2m paths on both sides of the street along Coolibah Drive. There is a median island crossing opportunity directly in front of 126 Coolibah Drive, which is within close proximity to the subject site. There is another crossing opportunity just south of Garnkirk Road. The paths provide a connection between local residents, the schools and the local centre, supporting walking as a mode of transport for local trips.

7.1.3. Proposals to Improve Pedestrian Access

There are no plans or requirement to improve the pedestrian access network outside of the development site as part of this development.

7.2. Cyclist Access

7.2.1. Existing and Proposed Cycle Facilities Within the Development

There are no existing cycling facilities within the development site.

As part of this development, on-site bicycle parking facilities are proposed, including six (6) bike parking bays where only two (2) are required. Cyclist parking access (located in the underground car park) can be achieved through both the vehicle access point and the ramp.

7.2.2. Existing and Proposed Cycle Facilities on Surrounding Roads

There is no dedicated cycling facilities on the surrounding roads, and as mentioned above, there are only 1.2m wide paths on either side of Coolibah Drive.

On April 27 2016, WA's laws were changed to allow cyclists of all ages to use footpaths, unless otherwise signed. The amendment to the *Road Traffic Code 2000* brought WA's bicycle laws into line with the rest of Australia, making it legal for parents to cycle alongside their children on footpaths, improving safety.

7.2.3. Proposals to Improve Cycle Access

There are no proposal or requirement to improve the cycling access to the site in the wider network as part of this development.

7.3. Public Transport Access

Bus route 445 runs between Warwick Station and Whitfords Station, with the closest bus stop northbound located 75m from the site and southbound approximately 115m from the site. Southbound bus route 445 operates every 15 minutes in the peak hours, and hourly off peak. There are paths on both sides of the road connecting to the bus stops.

8. SITE SPECIFIC ISSUES

There are no site specific issues requiring special attention as part of this assessment.

9. SAFETY ISSUES

No safety issues have been identified and thus there are no proposed mitigations. The proposed development is not expected to adversely affect the operation of Coolibah Drive nor the operation of the footpath on the side of Coolibah Drive fronting the proposed development.

10. CONCLUSION

As a result of the traffic analysis undertaken for proposed Childcare development at 122 & 124 Coolibah Drive in Greenwood, the following findings have been made:

- The proposed development is not expected to generate significant vehicular trips.
- Therefore, the impacts of the traffic volumes associated with the development on the road network are considered acceptable.
- Expected parking peak demand should be all contained on-site and no requirement for off-site parking.
- As part of the development, three pedestrian access points are proposed within the development, including two sets of stairs and one ramp.
- There are 1.2m wide paths on both sides of the street along Coolibah Drive and the median island directly in front of 126 Coolibah Drive provides crossing opportunity within close proximity to the subject site.
- As part of this development, on-site bicycle parking facilities are proposed, including six (6) bike parking bays where only two (2) are required.

The required WAPC checklist for this transport impact statement is at **Appendix B**.